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From: Vertical Flight Human Factors Program Manager, ATO-P R&D Human Factors
To: Vertical Flight TCRG
Subj: VERTICAL FLIGHT HUMAN FACTORS FIRST QUARTER '06 REPORT

Ref: Vertical flight human factors execution plans (<http://www.hf.faa.gov/vffunded.htm>)

Projects are listed below

a. Simultaneous Non-interfering Operations - Quantify VFR Navigation Performance.

ATO-P R&D Human Factors program manager e-mailed the PVFR results presentation to the sponsor point of contact for review and comment before next quarter's end of project presentation.

Project will be completed next quarter. Vertical flight TCRG point of contacts presentation is scheduled on 21 February and the entire TCRG presentation will be shortly thereafter.

b. Lowering GA Accidents in Low Visibility: UAV See-and-Avoid Requirements

First year objectives were successfully met. Researcher will receive second year funding for year two proposal.

Year two proposal will complete the development of the Spatial Standard Observer Detection and Recognition model, extend the Spatial Standard Observer Detection and Recognition model to predictions of aircraft detection, recognition, and identification data provided by U.S. Army Research Laboratory, conduct perception experiments to measure visibility of aircraft at specified distances and rotations, and conduct perception experiments to measure search performance in a UAV monitoring task.

This effort is cost shared with NASA Ames. Year two proposal has been accepted and funding will be transferred to NASA Ames.

c. Helicopter Pilot Performance: Visual Flight Rule (VFR) flight into Instrument Meteorological Conditions (IMC)

The purpose of this proposed project is to explore the performance limits for helicopter pilots who inadvertently fly into IMC conditions. The problem of inadvertent VFR flight into IMC has been well documented as a major cause of general aviation accidents. The performance limits of fixed wing pilots under these circumstances have also been investigated with alarming results. However this problem has not yet been studied sufficiently in civilian helicopter pilots. In general helicopter operations are more complex than those of fixed wing aircraft for several reasons including increased control difficulty and the ability to operate in a variety of flight regimes such as slow flight, hover, low level, and high speeds. Each of the different helicopter flight regimes have different operational and control demands. The present study was aimed at quantifying helicopter pilot performance after inadvertent VFR into IMC at different speeds and altitudes of operation.

Significant Milestones this Quarter:

- Formalized arrangements with Helicopter facility to run tests.
- Completed software development for data collection.
- Begun data collection.

Work in Progress:

- Arranged with Silver State Helicopters in Sacramento rent simulator and instructors for the study
- Developed software to interface with the Flyit simulator. This software allows us to record a large number of variables such as weather conditions, control inputs, and aircraft performance for offline analysis.
- Advertised across the country for pilots with experience in a Bell 206 and with an instrument rating.
- Set up administrative mechanisms at the University of Nevada to reimburse subjects for participation.
- Begun testing and collecting flight performance data. We have already completed testing over 15 subjects by the end of December. These subjects came from across the country and travel and reimbursement arrangements were made.

All available information indicates the project is on track.

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